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SOME TERATOLOGICAL FORMS OF TRILLIUM UNDULATUM.

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THREE interesting cases of teratological modification have come to my notice in our common Painted Trillium, *T. undulatum*, Willd., perhaps more familiar under the name *T. erythrocarpum*, Michx. Although many monstrosities have been observed in the Trilliums of the northeastern United States, abnormal development in this particular species seems to have been rarely noticed, for a careful search through American botanical journals has brought to light but two authentic records of this kind. It seems fitting, therefore, to record the forms recently observed.

The first case is as follows. The plant grew at Squam Lake, Holderness, New Hampshire, on the grounds of Mr. Edwin DeMeritte, who has a summer camp there. He noticed this Trillium for the first time on August 6 or 7, 1907, and writes that "there were two stems precisely alike growing side by side. . . . in the leaf-mould and scanty soil on a rocky ridge near the lake." One of these specimens Mr. DeMeritte picked and, through the kindness of Mr. William Brewster, presented to the Gray Herbarium, where I have had access to it, as well as to the other specimens to be mentioned later.

The plant was in fruit, which was "well formed and apparently ripe or nearly so, as it had turned red." Unfortunately when the specimen reached Cambridge the fruit and its pedicel were gone, but I am assured that these were normal, the three persistent sepals being present. Mr. DeMeritte writes that the fruit "was at the end of the stem above the upper tier of leaves exactly as when only one tier is found." Whether the petals and stamens were normal it is of

course impossible to say at present, as the plant was not observed in flower. Irregularities of this sort, however, have been shown to be remarkably persistent, and observations will be made during the coming season to determine this point.

The striking abnormality of this plant lies in the fact that, instead of the single whorl of leaves normally present, there are here three such whorls, one above the other, and separated by well developed internodes. Each whorl contains three leaves of normal size and shape. The leaves of the uppermost whorl, which is at the top of the stem, are narrowly ovate, taper-pointed, sessile, and from 7.5 to 9 cm. long. Those of the middle whorl, which is 4.5 cm. below the uppermost, are ovate, taper-pointed, slightly petioled, and 11.5 cm. long. The lowest whorl is 4.8 cm. below the middle one, and its leaves are broadly ovate, taper-pointed, 12.5 to 13.3 cm. long, and borne on petioles 2.5 cm. in length.

A similar teratological formation in the case of *Trillium sessile* has been recorded by Mr. L. S. Hopkins in the *Plant World*, September, 1902, pp. 182, 183. In the plant there described there were three stems from the same rootstock and one of these "had three whorls of three leaves each. The lower whorls were crowded very closely together, while the upper two were half an inch apart." This peculiarity was accompanied by irregularities in the flower.

A second anomaly in the Painted Trillium is shown by two specimens in the Gray Herbarium. On one sheet are two plants that doubtless grew close together, perhaps from the same rootstock. They were collected by Mr. Swallow at Brunswick, Maine, as indicated in Dr. Gray's handwriting on the sheet. There is no date, but the appearance of the sheet indicates age. The petals and stamens, so far as I can judge, are not of the normal number, but that may well be due to the fact that the plants are passing out of flower, as the fruits are already forming and some of the petals and stamens may have fallen. In this case the abnormality lies in the enormous calyx. In both flowers the sepals are leaf-like, ovate, and taper-pointed, as in the typical leaves, though sessile. In one specimen the sepals are 8.2 cm. long and this greatly enlarged calyx is borne on a pedicel 7.5 cm. long above the leaves, which are normal, being 1 dm. long, on petioles 2.5 cm. in length. In the other specimen the sepals are 9.2 cm. long, the calyx being raised upon a pedicel 3.8 cm. long above the normal leaves, which are 9 cm. long, on petioles 1.3 cm. in length.

On another sheet in the Gray Herbarium I find the third unrecorded instance of teratology in the species in question. The specimen was collected in Fitzwilliam, New Hampshire, in May, 1891, by Miss K. L. Kimball. In this plant the leaves, sepals, petals, and styles are in fours. There are seven stamens but there was probably an additional one originally.

In the *Plant World* for April, 1903, p. 89, Mr. E. L. Morris states that abnormalities in *Trillium undulatum* "have been noted by the Macouns, father and son." In regard to this Mr. J. M. Macoun writes me that "neither my father nor I have ever noted teratology in *T. undulatum*," so there must have been some misunderstanding in regard to the matter.

Two other records deserve mention. In *RHODORA* for February, 1905, p. 40, Mr. Frederick S. Beattie says, "I collected a specimen of this [*T. undulatum*] on May 21 in Gloucester which possessed two stems proceeding from the same corm. Furthermore, on the flower of one of the two twin-stems, one of the sepals was enlarged to a length five-sixths that of the ordinary leaves, the shape of this sepal also approximating that of a leaf, rather than that of a sepal."

In the *American Journal of Science and Arts*, 3d series, vol. XV, February, 1878, p. 153, Dr. Asa Gray says, "Pastor Wibbe also sends a polymerous state of *Trillium erythrocarpum*. Something of the kind not rarely occurs in *Trillium*. This plant, which has been constant since discovered five years ago, has all the parts from leaves to carpels regularly increased (in the leaves apparently by chorisis) from three to nine, except that the stamens hardly keep up to double the number of the petals." Doubtless the very specimen referred to is the one that I find in the Gray Herbarium. It is labelled in Dr. Gray's handwriting, "*T. erythrocarpum* — 8-merous — Lily Marsh near Oswego, N. Y.— J. H. Wibbe — 1877." A careful examination of the plant, however, shows a discrepancy between the number of parts and the description as quoted above, the statement on the label being more nearly correct. There are eight sepals and eight petals and all these are normal with the exception of one sepal which has a white petaloid growth on one side. There are at least 20 stamens and on the side of the pistil that is visible there are six carpellary divisions of the ovary. The leaves are in a whorl at the top of the stem and are seven in number, but the 8-merous character is shown by the fact that one of the leaves is double. It has two midribs and is forked at the tip, the sinus between the two apices being half an inch deep.

The genus *Trillium* seems peculiarly subject to departures from the normal type and cases without number, affecting every part of the plant, have been recorded in our journals. A perusal of these shows how infinite are the combinations of abnormalities that can be found in individual plants. Various whorls of leaves of different shapes, some long-petioled and rising from the base of the stem, sepals white, petals green and petioled, ovary stalked, leaves and various parts of the flower wanting — these are but a few of the manifold changes that the various species of *Trillium* are subject to. Teratology is of great assistance in teaching us the morphology of the plant and hence is a study of much importance. It is hoped that due record will be made of the discovery of any new instance of variation in *Trillium undulatum*.

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THE NEW ENGLAND SPECIES OF PSEDERA.

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ANOTHER old name has come to light to replace one of our well known generic names, for there is no doubt that we must on the ground of priority substitute the name *Psedera*¹ of Necker (Elem. Bot. 1:158. 1790) for *Parthenocissus* and also for *Ampelopsis* if we consider *Ampelopsis quinquefolia* as belonging to the latter genus. Greene, who seems to have studied very thoroughly Necker's much neglected and misunderstood work, has recently drawn attention to the fact that Necker's *Psedera* usually referred as a doubtful genus to the *Araliaceae* represents a genus based on *Hedera quinquefolia* of Linnaeus. Aside from his description the statement of Necker that the genus is based on a species of *Hedera* Linnaeus places Greene's identification beyond doubt, for Linnaeus describes only two species, *Hedera Helix* and *H. quinquefolia*, of which the second agrees exactly with Necker's description of his *Psedera*. The acceptance of this name

¹ The name is apparently shortened from *Pseudohedera*, which refers to the fact that its type had been first described as a species of *Hedera*.